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EXAMINER	
PARK, EDWARD	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/501,714	Applicant(s) SATO ET AL.	
	Examiner EDWARD PARK	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2008*.

2a)☐ This action is FINAL. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 6-10* is/are rejected.

7)☒ Claim(s) *5* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-10, in the reply filed on 12/22/08 is acknowledged.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

3. The following is a quotation of 37 CFR 1.75(a):

> The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

4. Claims 1-10 are objected to under 37 CFR 1.75(a), as failing to conform to particularly point out and distinctly claim the subject matter which application regards as his invention or discovery. The claim utilizes a forward slash "/", for example in claim 1, which recites "predication/compensation". It is unclear whether the "/" operation indicates an "and", and "or", or an "and/or". Clarification is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.
>
> When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).
>
> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim 9 is rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. The Federal Circuit[1], relying upon Supreme Court precedent[2], has indicated that a statutory "process" under 35 U.S.C. 101 must (1) be tied to a particular machine or apparatus, or (2) transform a particular article to a different state or thing. This is referred to as the "machine or transformation test", whereby the recitation of a particular machine or

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[1] *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

[2] *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility (See *Benson*, 409 U.S. at 71-72), and the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity (See *Flook*, 437 U.S. at 590"). While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform an article nor are positively tied to a particular machine that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. That is, the method includes steps of motion prediction/compensation, etc. is of sufficient breadth that it would be reasonably interpreted as a series of steps completely performed mentally, verbally, or without a machine. The cited claims do not positively recite any structure within the body of the claim which ties the claim to a statutory category. Furthermore, the examiner suggests that the structure needs to tie in the basic inventive concept of the application to a statutory category. Structure that ties insignificant pre or post solution activity to a statutory category is not sufficient in overcoming the 101 issue. Additionally, the limitations do not claim a meaningful and significant external, non-data depiction of a physical object or substance can be produced.

[1] *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

[2] *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

Claim 10 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 10 defines a program embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and

functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Note:

"A transitory, propagating signal ... is not a "process, machine, manufacture, or composition of matter." Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter." (*In re Petrus A.C.M. Nuijten;* Fed Cir, 2006-1371, 9/20/2007).

Should the full scope of the claim as properly read in light of the disclosure encompass non-statutory subject matter such as a "signal", the claim as a whole would be non-statutory. In the case where the specification defines the computer readable medium or memory as statutory tangible products such as a hard drive, ROM, RAM, etc, as well as a non-statutory entity such as a "signal", "carrier wave", or "transmission medium", the examiner suggests amending the claim to *include* the disclosed tangible computer readable media, while at the same time *excluding* the intangible media such as signals, carrier waves, etc.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, 3, 4, 6, 7, 9, 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al (US 2001/0010706 A1).

Regarding claim 1, Sato discloses an image information encoding apparatus adapted for encoding an input image signal at least including intraframe encoding image, interframe forward predictive encoding image and interframe bidirectional predictive encoding image by orthogonal transform and motion prediction/compensation processing to generate image compressed information, the image information encoding apparatus comprising:
motion prediction/compensation means for performing motion prediction/compensation processing based on different interpolation methods with respect to the interframe forward predictive encoding image and the interframe bidirectional predictive encoding image (see paragraph [0062]; convert first compressed image data to second compressed image data more compressed than the first compressed image data. The first compressed image data is interlaced-

scan data that has been compressed by orthogonal transform and motion compensation. The second compressed data is serial-scan data. The method comprises the steps of: decoding the first compressed image data by using only lower mth-order orthogonal transform coefficients included in nth-order orthogonal transform coefficients (where m<n), in both a vertical direction and a horizontal direction in the first compressed image data; converting interlaced-scan data output from the image data decoding means to serial-scan data; and encoding the serial-scan data, thereby generating the second compressed image data),

wherein the motion prediction/compensation means performs motion prediction/compensation processing by using a first filter with respect to the interframe forward predictive encoding image(see paragraph [0040], [0041]; section 108 (field prediction) and the section 109 (frame prediction), a twofold interpolation filter, such as a half-band filter, generates a 1/2-precision pixel and a 1/4-precision pixel is generated from the 1/2-precision pixel by means of linear interpolation, thus achieving interpolation in horizontal direction. In this case, a half-band filter may be used to output, as a predicted value, a pixel that has the same phase as the pixel read from the frame memory 110; half-band filter may be used as the twofold interpolation filter and may output pixel values of the same phase as those read from video memory 110, which represent a predicted image) and performs motion prediction/compensation processing by using a second filter having the number of taps lesser than that of the first filter, or linear interpolation with respect to the interframe bidirectional predictive encoding image (see paragraph [0042], [0043]; motion-compensating sections (frame prediction) 109 performs interpolation in vertical direction. First, as shown in FIG. 9A, the section 109 reads pixel values ga that have a phase difference between fields, from the video memory 110, in accordance with the vector value

contained in the input compressed image data (bit stream). Then, as shown in FIG. 9B, a twofold interpolation filter generates a 1/2-precision pixel gb in each field. As shown in FIG. 9C, the motion-compensating sections (frame prediction) 109 performs inter-field linear interpolation, thereby generating a 1/4-precision pixel; coefficients are prepared and applied, so that the two-step interpolation, which consists in using a twofold interpolation filter and performing linear interpolation, may be accomplished in a single step in both the horizontal direction and the vertical direction).

Regarding claim 2, Sato discloses selecting, as an interpolation method with respect to the interframe bidirectional predictive encoding image, a method in which operation quantity and the number of memory accesses are reduced to more degree as compared to the interframe forward predictive encoding image (see paragraph [0062]).

Regarding claim 3, Sato discloses having the same pixel accuracy of motion prediction/compensation processing at the interframe forward predictive encoding image and the interframe bidirectional predictive encoding image (see paragraph [0008]).

Regarding claims 4, 7, Sato discloses selecting motion prediction/compensation processing by different pixel accuracies at the interframe forward predictive encoding image and the interframe bidirectional predictive encoding image (see paragraph [0038], [0042]; compensation modes, a twofold interpolation filter, such as a half-band filter, generates a 1/2-precision pixel and a 1/4-precision pixel is generated from the 1/2-precision pixel by means of linear interpolation, thus achieving interpolation in horizontal direction. In this process, a half-band filter may be used to output, as a predicted value, a pixel that has the same phase as the pixel read from a frame memory. If this is the case, it is unnecessary to repeat multiplication and

addition as many times as the number of taps); and performing motion prediction/compensation processing of 1/4 pixel accuracy with respect to the interframe forward predictive encoding image, and performs motion prediction/compensation processing of ½ pixel accuracy with respect to the interframe bidirectional predictive encoding image (see paragraph [0038], [0042]; generates a 1/2-precision pixel gb in each field. As shown in FIG. 9C, the motion-compensating sections (frame prediction) 109 performs inter-field linear interpolation, thereby generating a 1/4-precision pixel gc).

Regarding claim 6, Sato discloses performing motion prediction/compensation processing of 1/4 pixel accuracy by linear interpolation with respect to the interframe bidirectional predictive encoding image (see paragraph [0038], [0042]; generates a 1/2-precision pixel gb in each field. As shown in FIG. 9C, the motion-compensating sections (frame prediction) 109 performs inter-field linear interpolation, thereby generating a 1/4-precision pixel gc).

Regarding claim 9, Sato discloses an image information encoding method of encoding an input image signal at least including intraframe encoding image, interframe forward predictive encoding image and interframe bidirectional predictive encoding image by orthogonal transform and motion prediction/compensation processing to generate image compressed information, the image information encoding method including:

a motion prediction/compensation step of performing motion prediction/compensation processing based on different interpolation methods with respect to the interframe forward predictive encoding image and the interframe bidirectional predictive encoding image (see paragraph [0062]; convert first compressed image data to second compressed image data more

compressed than the first compressed image data. The first compressed image data is interlaced-scan data that has been compressed by orthogonal transform and motion compensation. The second compressed data is serial-scan data. The method comprises the steps of: decoding the first compressed image data by using only lower mth-order orthogonal transform coefficients included in nth-order orthogonal transform coefficients (where $m<n$), in both a vertical direction and a horizontal direction in the first compressed image data; converting interlaced-scan data output from the image data decoding means to serial-scan data; and encoding the serial-scan data, thereby generating the second compressed image data),

wherein the motion prediction/compensation step comprises: performing motion prediction/compensation processing by using a first filter with respect to the interframe forward predictive encoding image (see paragraph [0040], [0041]; section 108 (field prediction) and the section 109 (frame prediction), a twofold interpolation filter, such as a half-band filter, generates a 1/2-precision pixel and a 1/4-precision pixel is generated from the 1/2-precision pixel by means of linear interpolation, thus achieving interpolation in horizontal direction. In this case, a half-band filter may be used to output, as a predicted value, a pixel that has the same phase as the pixel read from the frame memory 110; half-band filter may be used as the twofold interpolation filter and may output pixel values of the same phase as those read from video memory 110, which represent a predicted image), and performing motion prediction/compensation processing by using a second filter having the number of taps lesser than that of the first filter or linear interpolation with respect to the interframe bidirectional predictive encoding image (see paragraph [0042], [0043]; motion-compensating sections (frame prediction) 109 performs interpolation in vertical direction. First, as shown in FIG. 9A, the section 109 reads pixel values

ga that have a phase difference between fields, from the video memory 110, in accordance with the vector value contained in the input compressed image data (bit stream). Then, as shown in FIG. 9B, a twofold interpolation filter generates a 1/2-precision pixel gb in each field. As shown in FIG. 9C, the motion-compensating sections (frame prediction) 109 performs inter-field linear interpolation, thereby generating a 1/4-precision pixel; coefficients are prepared and applied, so that the two-step interpolation, which consists in using a twofold interpolation filter and performing linear interpolation, may be accomplished in a single step in both the horizontal direction and the vertical direction).

Regarding claim 10, Sato discloses a program for allowing computer to execute processing (see paragraph [0001], [0009], [0038]) which encodes an input image signal at least including intraframe encoding image, interframe forward predictive encoding image and interframe bidirectional predictive encoding image by orthogonal transform and motion prediction/compensation processing to generate image compressed information, the program including:

a motion prediction/compensation step of performing motion prediction/compensation processing based on different interpolation methods with respect to the interframe forward predictive encoding image and the interframe bidirectional predictive image (see paragraph [0062]; convert first compressed image data to second compressed image data more compressed than the first compressed image data. The first compressed image data is interlaced-scan data that has been compressed by orthogonal transform and motion compensation. The second compressed data is serial-scan data. The method comprises the steps of: decoding the first compressed image data by using only lower mth-order orthogonal transform coefficients

included in nth-order orthogonal transform coefficients (where m<n), in both a vertical direction and a horizontal direction in the first compressed image data; converting interlaced-scan data output from the image data decoding means to serial-scan data; and encoding the serial-scan data, thereby generating the second compressed image data),

wherein the motion prediction/compensation step comprises: performing motion prediction/compensation processing by using a first filter with respect to the interframe forward predictive encoding image (see paragraph [0040], [0041]; section 108 (field prediction) and the section 109 (frame prediction), a twofold interpolation filter, such as a half-band filter, generates a 1/2-precision pixel and a 1/4-precision pixel is generated from the 1/2-precision pixel by means of linear interpolation, thus achieving interpolation in horizontal direction. In this case, a half-band filter may be used to output, as a predicted value, a pixel that has the same phase as the pixel read from the frame memory 110; half-band filter may be used as the twofold interpolation filter and may output pixel values of the same phase as those read from video memory 110, which represent a predicted image), and performing motion prediction/compensation processing by using a second filter having the number of taps lesser than that of the first filter or linear interpolation with respect to the interframe bidirectional predictive encoding image (see paragraph [0042], [0043]; motion-compensating sections (frame prediction) 109 performs interpolation in vertical direction. First, as shown in FIG. 9A, the section 109 reads pixel values ga that have a phase difference between fields, from the video memory 110, in accordance with the vector value contained in the input compressed image data (bit stream). Then, as shown in FIG. 9B, a twofold interpolation filter generates a 1/2-precision pixel gb in each field. As shown in FIG. 9C, the motion-compensating sections (frame prediction) 109 performs inter-field linear

interpolation, thereby generating a 1/4-precision pixel; coefficients are prepared and applied, so that the two-step interpolation, which consists in using a twofold interpolation filter and performing linear interpolation, may be accomplished in a single step in both the horizontal direction and the vertical direction).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al (US 2001/0010706 A1) and in view of Suzuki et al (US 6,590,902 B1).

Regarding claim 8, Sato discloses all elements as mentioned above in claim 4. Sato does not disclose embedding in MotionResolution field at RTP layer within the image compressed information with respect to the interframe forward predictive encoding image and the interframe bidirectional predictive encoding image.

Suzuki, in the same field of endeavor, teaches embedding in MotionResolution field at RTP layer within the image compressed information with respect to the interframe forward predictive encoding image and the interframe bidirectional predictive encoding image (see col. 3, lines 5-27, col. 4, lines 8-20; layer-coded data transmitting apparatus for transmitting layer-coded data in a single channel, comprising means for converting data belonging to each of layers of an elementary stream (hereinafter refereed to as "ES") to packetized elementary stream (hereinafter

referred to as "PES") data, and wherein the converting means converts the ES data so that only ES data belonging to the same layer is contained in a single PES packet. The apparatus further comprises means for packetizing the PES packet to a real time protocol (hereinafter referred to as "RTP") packet for each layer data, so that only the RTP packet data belonging to the same layer is contained in a single RTP packet which transmits the RTP packet).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Sato reference to utilize embedding at RTP layer as suggested by Suzuki, to increase reliability and quality during congestion of a transmission network that leads to discarding of data important for video reproduction by utilizing I, P and B frame structures to positively discard the component data, starting with the least significant component (see col. 2, lines 29-45).

Allowable Subject Matter

10. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 5, none of the references of record alone or in combination suggest or fairly teach wherein the motion prediction/compensation means serves to perform motion prediction/compensation of 1/4 pixel accuracy, and performs, with respect to the interframe forward predictive encoding image, interpolation processing of ½ pixel accuracy by using filter coefficients having 6 taps expressed below {1,-5,20,20,-5,1)/32 to perform interpolation processing of 1/4 pixel accuracy by linear interpolation on the basis of generated pixels.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDWARD PARK whose telephone number is (571)270-1576. The examiner can normally be reached on M-F 10:30 - 20:00, (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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